Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554

In the Matter of	)	
	)	
Amendment of Section 2.106 of the	)	ET Docket No. 95-18
Commission's Rules to Allocate	)	RM-7927
Spectrum at 2 GHz for Use	)	
by the Mobile-Satellite Service	)	

To: The Commission

RESPONSE OF ASSOCIATION OF AMERICAN RAILROADS
TO SUPPLEMENTAL COMMENTS OF COMSAT CORPORATION

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SUMMARY

AAR opposes the suggestions made in the "Supplemental Comments of Comsat Corporation" and urges the Commission to reject Comsat's suggestions. Specifically, AAR opposes Comsat's recommendation that MSS users not pay for the relocation costs of the incumbents they displace. AAR is also extremely skeptical of Comsat's claims that the 2 GHz band can be shared safely between MSS and current FS users of the band such as AAR's railroad members.

In its Supplemental Comments, Comsat proposed that rather than pay to relocate FS users of the 2 GHz band, MSS users would be able to "feasibly share" the band for the short to medium term with FS users until such time as FS users would relocate to another band at their own expense. To bolster its contention that MSS users should not have to pay for the relocation of FS incumbents, Comsat cites the massive costs associated with relocation and the associated costs of building out its system, which, it claims in the aggregate would be prohibitively expensive and would impose an impossible economic burden on MSS providers. This is a curious argument in light of the fact that other emerging technology providers such as PCS are incurring significant costs in paying for spectrum, building out their systems and paying for the relocation of microwave incumbents. Thus, Comsat's economic burden argument is not a compelling rationale for allowing MSS providers force the relocation of incumbent FS users without paying for it. It would be manifestly unfair to force incumbents to vacate spectrum for MSS and not compensate them for the costs of doing so. Comsat cannot have its cake and eat it too.

Comsat also maintains that the results of the WRC-95 alter the premises underlying the Commission's assumptions concerning deployment of MSS in the 2 GHz band. Specifically, Comsat argues that the results of WRC-95 establish that MSS MSS and existing FS users "can share" the 2.1 GHz band. AAR believes that Comsat overstated the findings of WRC-95 and, in any event, is very skeptical of Comsat's sharing claim and remains unconvinced that sharing of the 2.1 GHz band can be accomplished while guaranteeing incumbents absolute non-interference, a prerequisite for the critical communications carried by AAR members' FS systems. Absent such absolute proof that the safety of its members' communications would not be compromised by interference from MSS sharing, AAR opposes Comsat's band-sharing suggestion and urges the Commission to reject the proposal due to these safety concerns.

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The Association of American Railroads ("AAR"), by it undersigned counsel, hereby responds to the "Supplemental Comments of Comsat Corporation" filed in the above-captioned proceeding on March 14, 1996. AAR's Response is prompted by the Commission's invitation in the Public Notice, DA 96-577, released April 17, 1996, for interested parties to file comments on Comsat's Supplemental Comments.

I. Background

In its Notice of Proposed Rulemaking ("NPRM") in this proceeding released January 31, 1995, the Commission proposed to allocate the 1990-2025 MHz band and the 2165-2200 MHz band to Mobile Satellite Service ("MSS"). Because the Broadcast Auxiliary Service ("BAS") currently uses the 1990-2010 MHz band, the Commission proposed to relocate that service to the 2110-2145 MHz band. In turn, because the 2110-2145 MHz band currently is used by common carrier and private fixed microwave

users, it would be necessary to relocate those users to other frequencies. In addition, the fixed microwave users would face relocation from the 2165-220 MHz band in order to accommodate the MSS downlink. Importantly, the Commission proposed in its NPRM that the MSS parties pay the relocation costs of incumbent users of these frequency bands.

AAR filed Comments in this proceeding on May 5, 1995, and Reply Comments on June 21, 1995. AAR hereby incorporates by reference its Comments and Reply Comments, as though they were made part hereof.

In its Supplemental Comments, Comsat has claimed that the results of WRC-95 alter the assumptions underlying the Commission's proposals for deployment of MSS in the 2 GHz band in the U.S. and support the adoption of Comsat's recommendation that MSS users not pay the relocation costs of the incumbent.

II. MSS Proponents Must Be Required To Pay For The Relocation Costs of Displaced Incumbents

Comsat's admitted objective is to avoid paying the relocation costs of the 2 GHz incumbents. Repeatedly throughout its Supplemental Comments, it claims that paying the terrestrial relocation costs, which could reach $3.0 billion, "could not be justified, even under the most optimistic MSS business plan;"[1/] that such payment "would impose an impossible economic burden on the MSS industry;"[2/] and that

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1/ Comsat Supplement Comments at 3.

2/ Id. at 12.

paying reallocation costs would be a "prohibitive burden that prospective MSS operators cannot undertake."[3/]

In its Reply Comments in this proceeding, AAR noted that the Commission's proposed relocation payment rules reflect a proper recognition of the benefit received by the MSS proponents and the burden imposed on the fixed microwave incumbents. See AAR Reply Comments at 4-7. The manifest fairness of the Commission's conclusion that, as between the two entities, the beneficiary of the new allocation should pay the displacement cost, cannot be gainsaid. The alternative, as proposed by Comsat, would place the burden and expense of relocation on the incumbent users, while conferring on Comsat and its foreign partners[4/] in the Inmarsat "ICO" system, an unprecedented windfall.

Comsat's claim in its Supplement Comments that the cost of relocation would be "prohibitive" simply is not credible in light of the entry costs -- including not only FS relocation expenses but spectrum costs as well -- which have been willingly accepted

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3/ Id. at 13.

4/ U.S. companies own only 14.8 percent of ICO. COMSAT Corporation has a direct investment in ICO of $94 million, or approximately 6.3 percent. In addition, COMSAT has an indirect investment in ICO of approximately $33 million through COMSAT's ownership share of Inmarsat's $150 million investment in the $1.5 billion enterprise. COMSAT's indirect investment equals an additional 2.2 percent ownership in ICO, bringing COMSAT's total investment to 8.5 percent. See "COMSAT Corporation Announces Investment in Global Handheld Communications Service," M2 Presswire, Feb. 6, 1995, available in LEXIS, CMPCOM Library, ALLNEWS File. Hughes Space and Communications International, Inc., invested $94 million of the $1.5 billion equity of ICO, which equals 6.3 percent ownership of ICO. See ICO's World Wide Web site at http://www.i-co.co.uk/ico-background.html.

by the PCS industry in the U.S. Compared to the $17 billion in spectrum paid thus far by the U.S. PCS industry,[5/] Comsat and its foreign partners in the Inmarsat ICO system have proposed to pay nothing for their spectrum.[6/] Similarly, compared to the microwave relocation costs of approximately $2.3 billion paid and to be paid by the U.S. PCS industry,[7/] the relocation costs estimated by Comsat are not at all "burdensome" or "prohibitive." Certainly if the business plans of the U.S. PCS companies can justify the payment of spectrum acquisition costs and incumbent FS relocation costs, then Comsat should be able to justify payment of only the FS relocation expenses.[8/] Alternatively, if these costs cannot be justified by Comsat and Inmarsat in business terms because of, for example, their disproportionately higher system infrastructure costs, then they should explore alternative business plans and should reexamine their intentions to enter the MSS marketplace.

5/ The PCS C-block spectrum raised $10.2 billion (See Communications Daily, May 7, 1996, at 1), and the A- and B- block auctions raised approximately $7 billion (See Communications Daily, June 14, 1995).

6/ See Comsat Comments at 24-25.

7/ According to the study by the Commission's Office of Engineering and Technology, creating new technology bands for emerging telecommunications technology, OET/TS 92-1, published January, 1992, there are 9,258 FS facilities in the 1850-1990 MHz band. Id. at 8. At a fair average replacement cost of $250,000 (See Comsat Comments at 12; See also Amendment to the Commission's Rules Regarding a Plan for Sharing Costs of Microwave Relocation, Notice of Proposed Rule Making, WT Docket No. 95-157, 11 FCC Rcd 1923 (1995) (discussing estimate of $250,000 cost per link for microwave relocation)), the total replacement cost of these 9,258 facilities would be slightly more than $2.3 billion.

8/ A, B and C block PCS licensees face massive buildout costs in addition to the costs of spectrum acquisition and incumbent relocation. (See Telecommunications Reports, May 13, 1996).

Comsat claimed in its Supplement Comments that if it were required to pay for terrestrial relocations around the world, the "magnitude of the relocation cost would be multiplied many fold," and that such a global relocation of terrestrial facilities by a small number of MSS operators at 2 GHz "is unrealistic and has not, and should not, be considered at the international level."[9/] There is a dual fallacy in Comsat's argument. First, it ignores the fact that the proposed Inmarsat ICO system is a worldwide system that will have access to markets around the world; under the circumstances, it is neither unreasonable nor unrealistic for Comsat and its foreign partners to shoulder the burden of relocation cost in countries where they seek the benefit of market access.

Second, Comsat is incorrect that the cost of global relocation of terrestrial facilities "has not, and should not, be considered at the international level." In one of the key resolutions dealing with the 2 GHZ allocation for MSS, the WRC-95 Conference specifically called upon those responsible for introducing MSS technology to take into account and address the concerns of affected countries so as to "minimize the possible economic impact of transition measures in respect to existing systems."[10/] Of course, the most obvious and straightforward way to minimize economic impact is for Comsat and its foreign partners to pay the relocation costs.

9/ Comsat Comments at 13-14.

10/ Resolve No. 5 of Resolution Com. 5-10, WRC-95 (emphasis added).

III. Comsat Has Not Demonstrated Adequately That MSS Can Share The Bands With The Fixed Service Incumbents With Absolute Safety

The U.S. railroad industry has no choice but to be extremely skeptical about Comsat's claim that sharing is feasible. Railroads rely heavily on their fixed microwave links, including those in the 2165-2200 MHz band, for the transmission of critical, safety-related information pertaining to train operations and train control. These links are used to monitor and control more than 1.2 million freight cars and passenger cars on more than 215,000 miles of track, carrying information regarding train signals, remote switching of tracks, routing of trains, relay of critical telemetry data from trackside defect detectors, and a host of other safety-related types of information.

Recent tragic events -- including the Amtrak/MARC train accident at Silver Spring, Maryland -- have placed a spotlight on issues of railroad safety. The unique characteristics of rail transportation demand that the railroad industry place a premium on reliable, interference-free communications. The size and massive weight of rail equipment, coupled with high train speeds, make train operations an extremely powerful and potentially destructive force. This potential is magnified by the extremely long stopping distances inherent in the operation of massive equipment moving on steel wheels on steel rail. For example, a fully-loaded freight train requires well over a mile to bring to a stop. Furthermore, trains are restricted to operating on rights-of-way such that, unlike other types of vehicles, they cannot be steered to avoid hazards or obstacles. If critical operational communications are blocked or obscured due to interference, disastrous results can occur, especially in situations where trains are transporting hazardous materials through densely populated areas.

Because of the extremely critical nature of the communications carried on the railroads' 2.1 GHz microwave links, the burden should be on Comsat to ensure that absolutely no interference is possible as a result of its proposed co-frequency operation of the MSS downlinks. Comsat's Supplemental Comments came nowhere near meeting this burden. Rather than ensure that band sharing by MSS and FS operators would result in absolutely no interference, Comsat, in its Supplemental Comments, states that band sharing is merely "feasible" or "possible."[11/] In fact, the document that Comsat rests its sharing argument on, Resolution Com 5-10, merely states that "sharing of the MSS with the fixed service in the short to medium term would be generally feasible." The term "generally feasible" is hardly a foolproof guarantee of safety and is not a sufficient assurance on which FS users such as railroads can risk the safety of their critical operations.

At a recent meeting hosted by Comsat at its headquarters, Comsat displayed its software and methodology used to simulate sharing possibilities. Because the proposed Inmarsat ICO system will use satellites in non-geostationary orbit and because they will constantly be in motion relative to a given FS receiver, it was necessary for Comsat to base its methodology on the statistical likelihood of interference taking into account the movement of the interfering satellite. Complicating the analysis is the fact that FS microwave facilities are designed to compensate for signal fading due to atmospheric conditions. Because the occurrence of fades is in large measure unpredictable, the Comsat interference analysis is premised on

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11/ Comsat Comments at 3, 4, 7.

measuring the statistical likelihood of interference. Although such an approach may be acceptable for some applications, it is clearly inappropriate for assessing the acceptability of interference to critical operations involving train control. In this regard, some railroad microwave links in the 2.1 GHz band are engineered for a "five nines" reliability level, i.e., 99.99999%. Any interference from Comsat's ICO satellites that would degrade this reliability factor or cause harmful interference at times of critical communications affecting train operations would be unacceptable, even if, for other users or under other operational circumstances, they were in the "acceptable" range for statistical purposes.

At the meeting at Comsat headquarters on April 25-26, the representatives of the FS community, including users and manufacturers, agreed to cooperate with Comsat in the framework of the Telecommunications Industry Association ("TIA") TR. 14.11 Committee to address issues pertaining to interference. AAR and its affected members hereby reiterate their commitment to participate in that process. However, until such time as further study and analysis is complete, it would be premature and inappropriate for the Commission to accept the proposals set forth by Comsat in its Supplemental Comments.

IV. Comsat Incorrectly Assumes That A "Gradual Transition" Will Mean No Extra Relocation Costs for Incumbent FS Users

In its Supplement Comments, Comsat told the Commission that its proposal would afford existing FS microwave users "up to nine more years to transition their operations out of the 2 GHz bands overlapping with MSS," and that this transition "should ensure that the vast majority of FS equipment is substantially amortized prior

to being replaced and that FS operators have sufficient time to plan for new installations in a different frequency band."[12/] Then, incredibly, Comsat followed that statement with the conclusion that, "given the length of the transition period, there would be no need for MSS to reimburse FS operators for their expenses associated with the gradual transfer to new FS installations outside the 2 GHz MSS bands."[13/] Comsat is seeking to have its cake and eat it, too. It seeks ultimately an exclusive primary allocation for MSS (not co-primary, which is the current state of the ITU allocation), but seeks at the same time to avoid paying the relocation costs of the present users of the band whom Comsat would ultimately force out of the band altogether. In this regard, Comsat is well aware that long-term co-primary sharing of the band between MSS and FS interests is not feasible. Indeed, WRC-95 recognized specifically in Resolution Com 5-10 that "in the long term, sharing will be complex and difficult in both [the MSS and FS] bands."[14/] The WRC-95 preparatory materials assembled for the Conference Preparatory Meeting ("CPM") indicated very clearly that the feasibility of sharing between MSS and the FS services in the MS downlink band was in the "Moderate-Poor" range. See, Table 6 of the CPM Report, attached hereto as Exhibit 1.

It is for precisely this reason that Comsat has called upon the FCC "to clear existing FS operations over time from the portion of the 2 GHz band" which is

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12/ Comsat Supplement Comments at 18-19.

13/ Id. at 19.

14/ Resolution Com 5-10, considering (c).

earmarked for MSS use.[15/] Comsat would have the Commission (and apparently the FS incumbents) believe that because a relocation is gradual there are no costs to be borne in the relocation. According to Comsat, its proposed approach would "not place an undue financial burden on the FS operators."[16/] But if the financial burden from Comsat's proposed "gradual transition" is so minimal, why is it unwilling to bear that costs itself? Comsat cannot have it both ways.

The mere fact that a piece of equipment has been fully amortized does not eliminate the additional costs inherent in reconfiguring an FS system from one frequency band to another. In the first place, the availability of suitable alternative frequencies is in no way certain, given the increased congestion in the FS portions of the 6 GHz band as a result of the current migration of displaced FS users from the 1.9 GHz PCS bands. If frequencies higher than 6 GHz must be used to replace the links which Comsat seeks to displace with its ICO system, there is a likelihood that costly intermediate sites will have to be acquired to accommodate the longer paths presently operating at 2.1 GHz. Furthermore, equipment will be more expensive at higher frequencies than at 2.1 GHz; system design and engineering costs will be incurred; and frequency coordination studies will have to be conducted. In short, additional costs will have to be incurred no matter how long or how gradual the transition. Returning to the point made at the outset of this Response regarding appropriate placement of the relocation burden, the inevitable expenses of relocation should fall on

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15/ Comsat Supplement Comments at 7.

16/ Id. at 11-13.

the beneficiaries of the spectrum reallocation -- in this case the MSS proponents -- not on those who are being evicted from the band and who will be forced to find another spectrum home.

V. Conclusion

For the reasons set out above, AAR opposes the proposals made by Comsat in its Supplemental Comments. AAR urges the Commission to ensure that MSS entrants using the 2.1 GHz band pay for the relocation costs of all displaced incumbents and that no sharing with MSS operators occur until it is conclusively proven that sharing can be accomplished with absolute safety.

Respectfully submitted,

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Attachment

May 17, 1996

EXHIBIT ONE

INTERNATIONAL TELECOMMUNICATION UNION
RADIOCOMMUNICATION SECTOR

Conference Preparatory Meeting

CPM Report on technical, operational and regulatory/procedural matters to be considered by the 1995 World Radiocommunication Conference

GENEVA, 1995

1.4.13 Summary of sharing constraints

Table 6 summarizes technical and operational constraints on MSS arising from co-primary (allocations in Article 8 table) sharing between MSS and other services. All of the subject sharing situations are subject to further study.

TABLE 6

General estimate of the feasibility of sharing between the MSS and other services in the range 1 - 3 GHz

Service sharing with MSS	Feasibility of sharing wth MSS (Earth-to-space)	Feasibility of sharing with MSS (space-to-Earth)
Radioastronomy	Moderate	Not applicable
Fixed	Poor	Moderate-Poor
Mobile Aeronautical (Telemetry)	Not applicable	Poor
Mobile (FPLMTS)	Poor	Moderate-Poor
Other Mobile	Poor	Moderate-Poor
Meteorological-Satellite (space-to-Earth)	Moderate-Good*	Not applicable
Meteorological Aids	Under Study	Not applicable
Aeronautical Radionavigation (satellite-based)	Under Study	Not applicable
Aeronautical Radionavigation (terrestrial-based)	Moderate	Not applicable
Radiolocation	Not applicable	Poor
Space Operation	Not applicable	Good
Fixed-Satellite	Moderate	Moderate

* Studies on sharing conditions are ongoing (see § 1.4.3)

Legend:

Good: For diverse mobile-satellite systems, sharing of frequency bands is possible between services provided in the same or nearby geographic areas.

Moderate: Technical standards may be needed to enable sharing between stations located in nearby-to-distant geographic areas or orbit locations and the capacity for mobile-satellite systems would likely be quite limited (feasibility is highly dependent on the deployment of systems in the other service).

Poor: Sharing is impractical, i.e. little if any useful capacity would be obtained for mobile-satellite systems even with large distance or orbital separations between stations.

CERTIFICATE OF SERVICE

I, Tina Harris, hereby certify that the foregoing "Response of Association of American Railroads to Supplemental Comments of Comsat Corporation" was served by first-class mail, postage prepaid, this 17th day of May, 1996 on the following persons:

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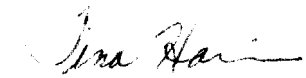

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